

In the United States Patent and Trademark Office

Serial Number: _____
Appn. Filed: 2003 December 23
Applicant(s): Jason L. Smith
Appn. Title: "Pressurized Fluid Controller Using Tilt / Push / Pull Operator"
Examiner/GAU: _____

Mailed: 2003 Dec. 23,
At: San Jose, CA

Information Disclosure Statement

Commissioner of Patents and Trademarks
Washington, District of Columbia 20231

Sir:

Attached is a completed Form PT0-1449 and copies of the pertinent parts of the references cited thereon. Following are comments on any non-English-language references pursuant to Rule 98:

Harshman and Dietrich 4296773 and Cullen 4404991 show a typical prior art fluidic joy stick controller of those commercially available today. The joy stick levers have tiltable motion only which activates four valves. The Harshman and Dietrich 4296773 valves are shown plumbed to four air cylinders used to provide motion to an attached machine. Note, the controller has no utility beyond activation of the four air cylinders. A similar system utility limitation would be true if the Cullen 4404991 controller were plumbed to four air cylinders. When additional machine function control is required, the user of either of these inventions must add additional valves or switches. The recited claim 1 of my invention calls for a fluidic controller with joy stick lever that has similar lever tiltable motion activating four valves, but also includes a unique lever axial pull / push motion. In my invention, a second cam actuator is attached to the lever so that it can actuate two more sets of four valves providing more machine control utility than prior art inventions.

Rytter, Boucher, and Kelley 5042314 show a prior art joy stick controller where the tilting of the joy stick lever actuates hydraulic valves plumbed to control steering, and has added additional electric switches to add required machine function controls (transmission shifting and vehicle direction). The invention has the complexity problem of changing the electric signals from a thumb switch and a finger switch to hydraulic pressures needed to change vehicle speed and shift gears. The invention has another complexity problem that the finger switching direction has not an intuitive response with vehicle motion and must be learned. The recited claim 1 of my invention includes similar hydraulic valves actuated by lever tilting that can control steering much the same as Rytter, Boucher, and Kelley 5042314. My invention also includes additional valves actuated by joy stick lever pushing / pulling which can easily be plumbed directly to hydraulic transmission shifting and vehicle direction actuators without requiring additional electric switches. Furthermore, the plumbing of my invention to a similar vehicle as that described in Rytter, Boucher, and Kelley 5042314 is more intuitive. For example forward / reverse movement of my invention lever could more intuitively control forward / reverse direction of the vehicle. Continuing on, left / right motion of my invention lever could more intuitively control left / right steering of the vehicle. Finally, up / down motion of the lever could intuitively shift transmission gears up / down.

Watanabe 4812802 shows a prior art electrical joy stick controller typical of those used in the semiconductor equipment industry to control pitch and roll (levelness) of heavy robotic or circuit board test fixtures docking to other semiconductor machines. The industry typically uses electric motor rotated jacking screws to position the heavy equipment. The electric potentiometers of the Watanabe 4812802 controller would typically control the positions of the jack screws. The use of jack screws for robot positioning has the following limitations:

- i. the jack screw actuators are too high to fit under the robot structure and must be mounted external to the robot on brackets increasing the robot footprint area significantly

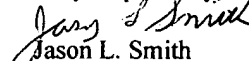
ii. the jack screws are expensive, and heavy

My invention controller has a sufficient quantity of valve controls to eliminate need for electric controls. My invention allows a simple all pressurized controller and use of all pressurized actuators. Specifically electric jack screws can be replaced with simple air bags. This all pressure system to control pitch, roll, and elevation of robotics with my invention would solve the limitations of the Watanabe 4812802 system controlling jack screws:

- i. use of air bags have very low profile (about 0.7") actuation, and can fit easily under the robot structure
- ii. the air bags are less expensive and lighter in weight.

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ENC: PTO-1449 & References

Very respectfully,


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FORM PTO-1449
(REV. 7-80)

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO.

SERIAL NO.

LIST OF PRIOR ART CITED BY APPLICANT

(Use several sheets if necessary)

APPLICANT

Jason L. Smith

FILING DATE

2003, Dec 23

GROUP

Pressurized Fluid Controller U.S. PATENT DOCUMENTS Using TTT/push/pull operator

*EXAMINER INITIAL	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
AA	4404991	1983	Cullen	137	636.1	
AB	4296773	1981	Harshman & Dietrich	137	312	
AC	5042314	1991	Ryter, Boucher, & Kelley	74	335	
AD	4812802	1989	Watanabe	338	128	
AE						
AF						
AG						
AH						
AI						
AJ						
AK						

FOREIGN PATENT DOCUMENTS

	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
						YES	NO
AL							
AM							

OTHER PRIOR ART (Including Author, Title, Date, Pertinent Pages, Etc.)

AR	
AS	

EXAMINER

DATE CONSIDERED

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.